

## IMPROVEMENTS IN AND RELATING TO WALLS FOR TUBULAR CARTONS

### Field of the Invention

[0001] The present invention relates to blanks for walls for tubular cartons, tubular cartons and to methods of manufacturing walls for tubular cartons; and to tubular cartons formed from such walls.

### Background to the Invention

[0002] It is known, for instance from GB-A-2 294 021 to form a wall for a tubular packaging container by providing two panels of card material secured together in a face to face relationship by adhesive distributed across the mutually contacting faces thereof, which is then curved to the required shape to form a tubular carton outer wall, the marginal portions of at least one of the panels secured together in overlapping relationship with the same panel. In the case of GB-A-2 294 021, the two panels are mutually aligned by providing them as a single sheet separated by a fold line, in which the fold line is provided running parallel to the eventual axis of the tubular carton outer wall of the tubular carton outer wall, i.e. as an end rather than at the top or bottom. To form the folded blank into a shaped tubular carton outer wall, the folded over end is held and the remainder of the outer wall formed round a mandrel. That is, the fold line is not bent to the shape of the tubular carton outer wall.

[0003] For manufacturing simplicity it is desirable to hold the folded over blank at the top or bottom rather than at an end but doing so can cause wrinkling of the formed product.

[0004] It is an aim of preferred embodiments of the present invention to overcome or obviate a problem associated with the prior art, whether such problem is referred to herein or otherwise.

#### Summary of the Invention

[0005] According to the present invention in a first aspect, there is provided a blank for a wall of a tubular carton, the blank comprising a first panel and a second panel, whereby with the first panel folded to a face to face relationship with the second panel, the folded blank has a first end with means to engage the first end with an opposite second end of the folded blank, the first panel being connected to the second panel by a connecting part, which connecting part extends along a part only of a mutual edge of the first and second panels adjacent the engaging means.

[0006] A mutual edge is one where one panel has the other adjacent to it.

[0007] The engaging means need not in and of themselves provide for engagement between the ends of the folded over blank and may require, for instance, adhesive to be provided. That is, the engaging means may merely partially enable engagement of the ends.

[0008] By providing the connection part along a part only of such an edge, that part of the folded over blank can be gripped for forming the tubular carton outer wall with less and often unobservable distortion.

[0009] Suitably, the mutual edge of the first and second panels is free from non-frangible connections apart from the connecting part.

[0010] Suitably, the connecting part extends along a minor part only of the edge adjacent the connecting means. Suitably, the connecting part extends for between about 3cm and about 5cm. Suitably, the connecting part extends for about 4cm. These are typical dimensions for a carton for a standard whiskey bottle. Suitably, the connecting part extends for about 1/5 of the circumference of a tubular carton outer wall formed from the blank.

[0011] Suitably, the connecting part is generally central relative to the first and second panels.

[0012] Suitably, the connecting part provides a hinged connection between the first and second panels.

[0013] Suitably, there is provided a frangible tab between the first panel and the second panel. Suitably, there is provided a plurality of frangible tabs between the first panel and the second panel. Suitably, a first frangible tab is provided on one side of the connecting part and another frangible tab is provided on the other side of the connecting part. The frangible tabs are useful in avoiding the connected edges of the first and second panels from becoming too separated during handling. For this reason, suitably a frangible tab is provided in the region of an end of a panel. By being frangible, they can be broken away during the manufacturing process so as not to hold the panels too securely together, which could cause distortion.

[0014] According to the present invention in a second aspect, there is provided a tubular carton wall comprising a blank having a first panel and a second panel, the first panel overlying a substantial part of the second panel and being in a face to face relationship with the second panel in which the first and second panels are connected by a connecting part along part only of an edge of the tubular carton wall.

[0015] Suitably, the connecting part extends along a minor part only of the edge. Suitably, the connecting part extends for between about 3cm and about 5cm. Suitably, the connecting part extends for about 4cm. Suitably, the connecting part extends for about 1/5 of the circumference of a tubular carton wall formed from the blank.

[0016] Suitably, the connecting part is generally central relative to the first and second panels.

[0017] Suitably, an adhesive secures the first panel to the second panel.

[0018] Suitably, the tubular carton wall is non-circular in cross-section.

[0019] A blank according to the first aspect of the present invention is suitable for use in this second aspect of the present invention.

[0020] According to the present invention in a third aspect, there is provided a method of manufacturing a tubular carton wall from a blank according to the first aspect of the present invention, which method comprises the steps of providing an adhesive for securing the first and second panels, positioning the first and second panels in a substantially face to face relationship, holding the blank in the region of the connected part thereof and shaping the blank to the required shape.

[0021] Since, apart from at the connected part, the first and second panels can move relative to each other, the curving of the folded blank does not form distortions.

[0022] The frangible tabs, if present, do not prevent such relative movement as if they have not been broken already, they can be by the relative movement of the panels.

[0023] The invention extends to cartons made from blanks according to the first embodiment of the present invention.

#### Brief Description of the Drawings

[0024] The present invention will now be described, by way of example only, with reference to the drawings that follow; in which:

[0025] Figure 1 is a plan view of a blank according to the present invention.

[0026] Figure 2 is a plan view of the blank of Figure 1 in a first folded configuration.

[0027] Figure 3 is a schematic illustration of apparatus for manufacturing the tubular carton of Figure 3.

[0028] Figure 4 is a functional flow diagram illustrating further the method of manufacture according to the present invention.

[0029] Figure 5 is a schematic perspective view of a tubular carton wall according to the present invention formed from the blank of Figures 1 and 2.

#### Description of the Preferred Embodiments

[0030] Referring to Figures 1 and 2 of the drawings that follow, there is shown a blank 2 comprising a first panel 4 and a second panel 6 joined by a non-frangible (in normal usage) connecting part 8 and frangible (relative to the non-frangible connecting part) tabs 10. The size of the connecting part 8 and tabs 10 has been enlarged to assist in understanding of this embodiment of the present invention. The blank is formed from flexible carton-board.

[0031] Both the first and second panels 4, 6 are generally rectangular, similar and offset from one another.

[0032] The connecting part 8 is provided generally centrally relative to the two panels 4, 6 and extends for a minor portion of the mutual length (indicated by numeral 12) of the panels 4, 6. For manufacturing convenience a length of 3-5cm is preferred, typically 4cm for a container for a standard sized whiskey bottle.

[0033] In this embodiment there are two frangible tabs 10, one each in the region of the ends of the panels 4, 6, i.e. one either side of the connecting part 8.

[0034] Referring to Figure 2, when the panels 4, 6 are folded over their non-overlapping ends provide a means 14 for engaging the opposite end of the blank thereof, with an abutment edge. The present invention is not restricted to this manner of joining the ends of the blank 2 and many alternative engaging methods exist.

[0035] Referring to Figure 3 of the drawings that follow, there is shown an apparatus 20 for forming a tubular carton wall from the blank shown in Figures 1 and 2. The apparatus 20 comprises a driven belt 22, a mandrel 24, a first clamp 26 and a second clamp 28. The mandrel 24 and clamps 26, 28 provide a folding station 30.

[0036] Operation of the apparatus 20 will be described with reference to Figure 4 of the drawings that follow, which is a functional flow diagram of a method according to the present invention.

[0037] In step 100, a blank 2 is provided. In step 102, an adhesive (indicated schematically by the hashed area of reference numeral 16 in Figure 2) is applied to one of the faces of the panels 4, 6 in an area which is to overlap the other panel 6, 4. The

blank is then folded into a face-to-face mutually overlapping relationship (step 104) in which the adhesive is sandwiched between the two panels 4, 6.

[0038] In step 106 the folded blank 2 is provided by the driven belt 22 to the folding station 30. The blank 2 is positioned so that the connecting part 8 of the blank 2 lies between the first clamp 26 and the mandrel 24. In step 108 the first clamp 26 moves upwardly to clamp the blank 2 against the mandrel 24. Thus the part of the blank 2 that is held in position is that with the connecting part 8.

[0039] In step 110 the panels either side of the mandrel 24 are folded about the mandrel 24 with their engaging means engaging as required (with adhesive if necessary). In step 112 the final clamp 28 moves downwardly to hold the free ends of the panels 4, 6 in place to enable sufficient drying to take place for the now formed tubular carton wall to hold its shape and for the ends to be secured together.

[0040] As the panels are folded round the mandrel 24 in step 110, the frangible tabs 10 may break as the difference in circumference of the interior and exterior panels of the tubular carton wall causes sliding movement between them. As the panels are secured relative to each other by connecting part 8 and at this stage by mandrel 24 and first clamp 26, this does not cause a problem.

[0041] By only providing a connecting part between the first and second panels 4, 6 in the region in which they are clamped, and leaving the rest of their mutual edge substantially unjoined, the required relative movement of the panels 4, 6 during the manufacturing process is accommodated.

[0042] Referring to Figure 5 of the drawings that follow, there is shown a tubular carton wall 30 formed from the blank shown in Figures 1 and 2, using the apparatus and method described above, with reference to Figures 3 and 4.

[0043] Normally the tubular carton wall is used to form a tube, for instance for use in packaging with at least one closed end and optionally a removable lid.

[0044] Steps within the method of the present invention may be carried out manually or by machine.

[0045] Although a 3 "sided" tubular carton wall with curved corners is shown, it will be appreciated that many shapes are possible.

[0046] Although it is preferred for there only to be a single connecting portion, the present invention extends to embodiments with more than one.

[0047] The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

[0048] All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

[0049] Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.



[0050] The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.